PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF		James R. Woodward, et al.
FOR		**ELIMINATION OF WELD IN CERAMIC METAL HALIDE ELECTRODE-LEADWIRE**
SERIAL NO		09/393,563
FILED		September 10, 1999
EXAMINER	:	GUHARAY, K.
ART UNIT	:	2879
LAST OFFICE ACTION		May 23, 2003
ATTORNEY DOCKET NO.	:	GEC 2 0340 LD 10956

Cleveland, Ohio 44114-2518

DECLARATION UNDER 37 C.F.R. §1.131

Mail Stop – No Fee
Commissioner For Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

1. We, James R. Woodward and James T. Dakin, do hereby declare and say that we are joint inventors in the above-identified United States patent application, Serial No. 09/440,424.

2. We have read and are familiar with the Office Action issued May 23, 2003 in connection with the above-identified United States patent application. We have further read and are familiar with U.S. Patents Nos. 6,208,070 B1 issued to Sugimoto (hereinafter "the '070 patent")

3. This Declaration is to establish possession of the invention in this application in the United States at a date prior to December 22, 1998, which is the effective date of the '070 patent, and diligence therefrom to the date of filing of the present application. This Declaration is being submitted prior to a final rejection issuing in the above-identified patent application.

4 To establish possession of the invention at least prior to December 22, 1998, attached please find a redacted copy of an Invention Disclosure, submitted to General Electric Patent Operation #1200 and to the General Electric Patent Coordinator (Exhibit 1, 2 pages) as evidence of possession of the invention. We hereby declare that the relevant portions of Exhibit 1 predate December 22, 1998, the effective date of the '070 patent.

5. In particular, Exhibit 1 describes the present invention which comprises a ceramic metal halide lamp that replaces the traditional 3-part electrode/leadwire with a 2-part electrode/leadwire. As explained in Exhibit 1, a 2-part electrode/leadwire in accordance with the present invention can be made by using a single 0.304 mm OD tungsten wire for the electrode shank and the overwind component mandrel. Furthermore, the electrode tip coil and overwind could be made from a second 0.175 mm OD tungsten wire.

6. Each date redacted in Exhibit 1 is at least prior to December 22, 1998, the effective date of the '070 patent.

7 It is submitted that the information attached as Exhibit 1 clearly demonstrates possession of the inventive ceramic metal halide lamp which comprises an envelope, an elongated interior chamber disposed within the envelope having a lamp body located therein, at least one electrode lead partially housed by the interior chamber, and a single continuous elongated mandrel forming a shaft of the electrode lead in this country at a date at least prior to December 22, 1998.

8. To establish reduction to practice of the invention prior to December 22, 1998, attached please find redacted copies of several documents (collectively labeled as Exhibit 2, 4 pages) documenting this. Specifically, attached are:

A) An email from Mark Duffy reporting the first work to seal the inventive two part leads into arc tubes.

B) An email from Bernard Bewley, a metallurgist involved in the project who was responsible for procuring key components and detailing thermal stress modeling of the subject leads.

C) A lab notebook log entry detailing the sealing process for the two part leads (designated CMH66).

D) Copies of x-rays showing arctubes with the inventive two part leads.

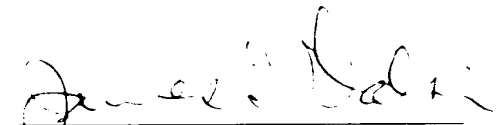
9. We hereby declare that all the relevant portions of Exhibit 2 predate December 22, 1998, the effective date of the '070 reference.

10. It is submitted that the above information evidences a date of conception and reduction to practice prior to December 22, 1999.

11. We hereby declare that all statements made herein are of our own knowledge and are true and that all statements are made on information and belief and are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

James R. Woodward

Date: 6-Aug-03



James T. Dakin

Date: 6-Aug-03

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Exhibit 1

Urgency Information	GE LIGHTING Invention Disclosure	FOR PATENT OPERATION USE
		Docket No 10956
Patent Coordinator Jack Strok	Send original to Patent Operation #1200 and copy to designated Patent Coordinator	Date Opened [redacted] Assigned Attorney CEXI

RECEIVED [redacted]
PATENT ADMINISTRATOR

TITLE 2-piece CMH electrode leadwire

PRODUCT LINE: Ceramic Metal Halide Lamp

DESCRIPTION OF INVENTION (use additional sheets for illustrations as needed)

The invention is to replace the current 3-part electrode/leadwire used in Ceramic Metal Halide (CMH) lamps with a 2-part electrode/leadwire. The 3-part electrode/leadwire used in the 70W and 100W CMH lamps consists of an W electrode tip, a Mo overwind section and Nb lead welded together.

A 2-part electrode/leadwire can be made by using a single 0.304mm OD W wire for the electrode shank and the overwind component mandrel. The electrode tip coil and overwind would be made from a second 0.175mm OD W wire.

The dimensions for the W electrode tip would be the same as current design. The OD of the overwind section would be the same as current design.

The advantages of this design change would be:

1. No weld needed between electrode tip and overwind section, increasing yields of welding process and reducing lamp shrinkage and early failures due to broken tips.
2. Improved concentricity of electrode tip, increasing lamp life and performance by reducing arctube wall corrosion.
3. More consistant heat conduction from electrode tip, increasing lamp life by reducing tip burn back and operating voltage rise.
4. The CMH W electrode automated tip maker should be able to manufacture this electrode tip/overwind component at an acceptable variable cost.

The differences with current design would be:

1. W instead of Mo as material for overwind section
2. Overwind mandrel diameter 0.304 instead of 0.406mm
3. Overwind wire diameter 0.175 instead of 0.127mm

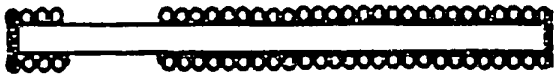
EACH INVENTOR Must Sign and Date Each page of the disclosure and Each sheet of any illustration.

Print Name	Inventor's Signature (FULL)	Date	Component #
James Robert Woodward	James Robert Woodward	[redacted]	7101

TWO WITNESSES (other than inventor) who have READ and UNDERSTOOD the disclosure Must Sign and Date Each page of the disclosure and Each sheet of any illustration.

Print Name	Witness's Signature	Date
Jack Strok	Jack Strok	[redacted]
Jim Dakin	James D. Dakin	[redacted]

One piece Tungsten electrode tip and overwind for 70 and 100W CMH lamps



Finished component: 0.3035mm mandrel wire diameter
0.1750mm overwind wire diameter
0.66mm outside diameter
4.5 +/- 0.5 turns (0.81 +/-0.075mm)
2.2 +/- 0.075mm space
9mm +/- 0.1mm overwind
Laser cut ends
Laser tacked overwind

Advantages:

No weld to be made between electrode tip and overwind
increased yields during leadwire welding
reduced lamp shrinkage and failures due to tip breaking
Better coaxial location of electrode tip
reduced arctube wall corrosion; increasing lamp life
More uniform heat conduction
reduced voltage rise

Design changes:

2 piece instead of 3 piece electrode/leadwire
Tungsten instead of Moly for overwind section
While overwind outsider diameter remains unchanged,
mandrel diameter 0.304 instead of 0.406mm
overwind diameter 0.175 instead of 0.127mm

[redacted]

R. Woodward
[redacted]
Wover.ppt

[redacted]

Dakin, James T (GEL,MSX)

From: Duffy, Mark E (GEL,MSX)
Sent: [redacted]
To: Berry, Tommie (GEL,MSX); Boroczki, Agoston (GEL,MSX); Chalmers, Alan G (GEL,MSX); Childs, Bill; Coxon, Eric (GEL,MSX); Dakin, James T (GEL,MSX); Deluca, John A (CRD); Gordon, Brian L (GEL,MSX); Heindl, Raymond A (GEL,MSX); Mucklejohn, Stuart (GEL,MSX); Ning, Changlong (GEL,MSX); Odell, Eddie (GEL,MSX); Preston, Barry (GEL,MSX); Ramaiah, Raghu (GEL,MSX); Scott, Curtis E (GEL,MSX); Sommerer, [illegible]
Subject: Two-piece electrode test (CMH66)

Friends,

We have completed the arctube build for a test of two piece (W-Nb) electrodes. There are 26 arctubes to be shipped to Leicester for G12 finishing and lifetesting. A key observation has already been made in this test. A severely high leg cracking probability (0.425/seal) is seen for the two piece electrodes using the standard sealing process. The comparison is as follows.

Electrode	Seals	Cracks	Probability	95% LCL	95% UCL	Good AT's
2-piece W-Nb	40	17	0.425	0.260	0.568	8
3-piece W-Mo-Nb	39	1	0.026	0.000	0.074	18

The difference is highly significant.

In proceeding forward with the evaluation of two piece electrodes, we would like to test the early life survival rate. If the lamps with 2-piece electrodes are able to survive the rigors of temperature stress during lifetesting, then it may justify working to develop a new sealing process on our existing equipment. Alternatively, we could hold this idea on the back burner for when the next generation of sealing process is developed.

Attached is the arctube construction information.

Cmh66.xls

Cheers,

Mark

Exhibit 2

Dakin, James T (GEL,MSX)

From: Bewlay, Bernard P (CRD)
Sent: [redacted]
To: Dakin, James T (GEL,MSX); Woodward, Rob (GEL,MSX)
Cc: Sommerer, Timothy J (CRD)
Subject: RL two component leadwire

JTD

James Howard and I were involved. I had some micrographs still I believe. I think the work was in late [redacted] early [redacted]. We also did quite a bit of thermal stress modeling in [redacted]. This was all pre the [redacted] date (application or issue?)

Bernard

WTS
2.90
- 2.1
0.8
x 2.
= 1.6

FOR CMH65 (150/612, w/ CERMETS)
[redacted] GAP = 10.0 mm.
IN CMH64, SSC SETTING OF
3.130 GAVE GAP = 7.500 mm.
SO WE NEED TO INCREASE GAP
BY 2.50 mm. CHANGE SSC
SETTING TO 5.63 mm.

MAKE
[redacted] AVG GAP (N=4) WAS 10.150, S=0.06.
5.63 - 0.15 = 5.48 NEW SETTING

SHOULD
[redacted] SSC setup for CMH66 (2-pc electrode test)
From data in SSCRIMP.XLS, to get 6.9mm
gap, the setting should be 2.58.

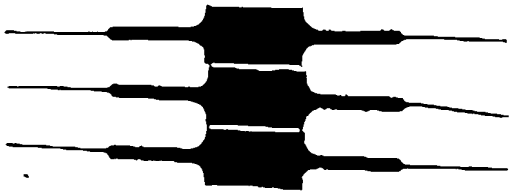
3)

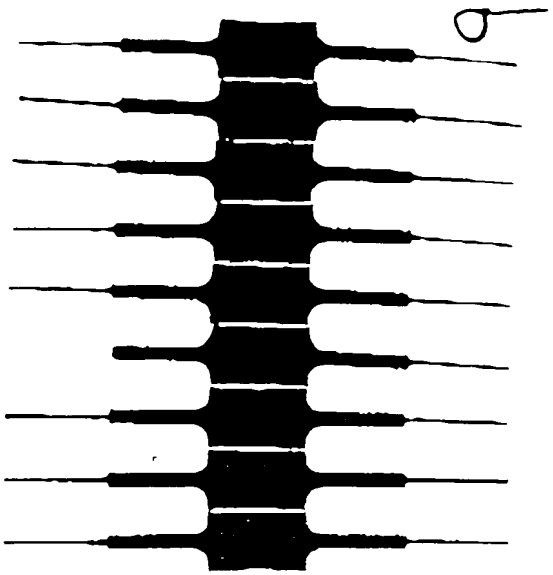
.04 N=
[redacted] SSC setup - CMH67
IN CMH66, GAP WAS 7.016 w/ SETTING
OF 2.580 WE WANT 6.900mm, SO
CHANGE SETTING TO 2.464

, N=11)
[redacted] SSC SETUP —
2.464 SETTING GAVE 6.834 GAP. WANT
TO CHG TO 7.900, SO SET TO 3.530

HE N
3.08
+ .04
3.1

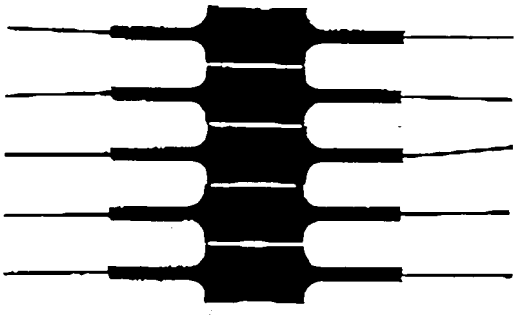
[redacted]

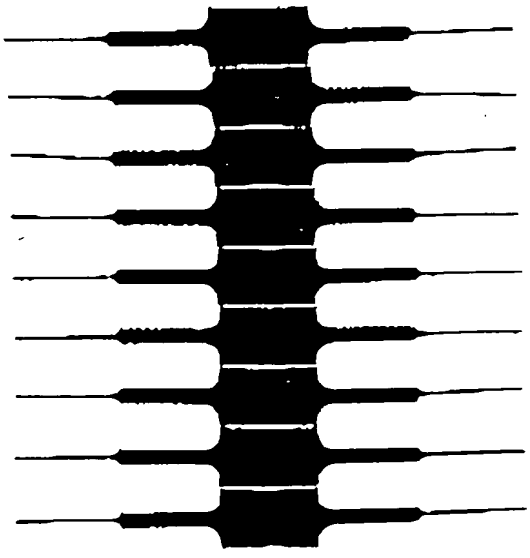




[redacted] CMH66 —— 2pc circ

CMH66 [redacted]





CMH66 PRE-TEST